

Clearinghouse
2016

ASEM desktop study on the role higher education can play in sustainable development through the development of lifelong learning skills

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Copenhagen 2016



Danish Clearinghouse for Educational Research is a unit at Aarhus University

Title	ASEM desktop study on the role higher education can play in sustainable development through and the development of lifelong learning skills
Copyright	© 2016 by Danish Clearinghouse for Educational Research
ISBN	978-87-7684-692-3 (electronic version) 978-87-7684-693-0 (printed version)
Section	Technical Report
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Publication month and year	September 2016
This report shall be cited as	Dyssegaard, C.B., Egelund, N., Bondebjerg, A., Sommersel, H. (2016). ASEM desktop study on the role higher education can play in sustainable development through the development of lifelong learning skills. Copenhagen: Danish Clearinghouse for Educational Research, Department of Education, Aarhus University
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This report has been made possible with funding from the Danish Ministry of Foreign Affairs and the Asia-Europe Foundation (ASEF).

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1 INTRODUCTION

1.1 Background

This ASEM desktop study was commissioned by the ASEM Education and Research Hub for Lifelong Learning (ASEM LLL Hub) and was conducted by Danish Clearinghouse for Educational Research.

The ASEM LLL Hub's operation is part of the ASEM education process where there is a focus on higher education and it forms a strong partnership with the Asia-Europe Foundation.

The ASEM LLL Hub, established in 2005, is an official network of Asian and European higher education institutions, working and learning together to achieve excellence in comparative research on lifelong learning, to offer research-based education policy recommendations, and to develop mutual understanding between Asia and Europe. It also facilitates researcher and student mobility and exchange within and between the two world regions. The Hub brings together more than 100 researchers in its five research networks, senior representatives of 36 universities in its University Council, and senior officials from 22 ministries of education and five flagship international organizations in its Advisory Board.

The ASEM LLL Hub provides a platform for dialogue between researchers, practitioners, and policymakers in order to contribute to evidence-based educational reform and innovation. Its five research networks exchange knowledge, conduct comparative research, and produce coordinated publications and reports. In parallel with these five active research networks, the Hub has a Hub University Council composed of senior representatives from its partner universities (currently 36 representatives from 36 universities in 28 ASEM countries) and a Hub Advisory Board that at present brings together 25 national ministries and five international organizations.

1.1.1 General background and problem areas

Education for Sustainable Development (ESD) has the aim of encouraging people to think about their responsibilities for creating a sustainable future. The roots of ESD go back to the 1960s and the 1970s when the environmental education movement gained momentum. After the United Nations Conference on the Human Environment, which was held in 1972 in Stockholm, Sweden, the international community began to consider the issues of ESD and environmental education. In 1975, UNESCO introduced the International Environmental Education Programme and conducted various types of educational activities. In 1992, UNESCO's 'Agenda 21' forged an important direction in ESD. In 2002, UNESCO established the UN Decade of Education for Sustainable Development (DESD 2005 - 2014) with a focus on

promoting the quality of education, reorienting educational programmes, increasing public understanding and awareness, and providing practical training.

In an analysis of articles published in the *International Journal of Sustainability in Higher Education from 2001 to 2010*, Wals (2014) found that until around 2010 most articles focused on aspects of promoting environmental management and reducing the ecological footprint of universities. In many countries, it has become expected that higher education play an important role in helping to achieve a sustainable future. In their systematic review, Yen-Chun Jim Wu and Ju-Peng Shen (2016) have looked at how academic research in higher education has developed in regard to education and sustainability. The review of 372 articles published between 2005 and 2014 finds that until around 2010 most articles focused on environmental protection, environmental science education, and environmental engineering education. After around 2010 there is a shift to education for sustainable development, promotion of citizenship, the importance of education for sustainable development in business schools, and the assessment of performance in education for sustainable development.

1.1.2 Aim and study question

The aim of this ASEM desktop study is to find relevant research literature about the role higher education plays in relation to lifelong learning and sustainable development in Asia. In a later report, the intention is to perform a comparative analysis of how selected countries in Asia and Europe work to promote lifelong learning in relation to ESD.

This first report will be guided by the following study question: How does higher education in selected countries in Asia contribute to sustainable development by working with the continuous development of lifelong learning skills?

1.1.3 Definitions

Lifelong learning

The ASEM LLL Hub concurs with the definition adopted by the European Commission, which views lifelong learning as “all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competence, within a personal, civic, social and/or employment-related perspective”.¹

Lifelong learning is therefore about:

- “Acquiring and updating all kinds of abilities, interests, knowledge and qualifications from the preschool years to post-retirement. It promotes the development of knowledge and competences that will enable each citizen to adapt to the knowledge-based society and actively participate in all spheres of social and economic life, taking more control of his or her life.

¹<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2001:0678:FIN:EN:PDF>

- Valuing all forms of learning, including: formal learning, such as a degree course followed at university; non-formal learning, such as vocational skills acquired at the workplace; and informal learning, such as inter-generational learning, for example where parents learn to use ICT through their children, or learning how to play an instrument together with friends.”

Sustainable development²

- “Sustainable development stands for meeting the needs of present generations without jeopardizing the ability of future generations to meet their own needs – in other words, a better quality of life for everyone, now and for generations to come. It offers a vision of progress that integrates immediate and longer-term objectives, local and global action, and regards social, economic and environmental issues as inseparable and interdependent components of human progress.
- Sustainable development will not be brought about by policies only: it must be taken up by society at large as a principle guiding the many choices each citizen makes every day, as well as the big political and economic decisions that have to be taken. This requires profound changes in thinking, in economic and social structures and in consumption and production patterns.”

1.1.4 Time span, geographical and language delimitations

Time span limitation

The scope is delimited in time to studies published from 2010 to 2016.

Geographical boundaries

Geographically, this ASEM desktop study is delimited to include studies conducted in Asia and Oceania, including Australia and New Zealand.

Language delimitation

Only studies in English have been included. This is based on the expectation that the majority of studies in this field will be published in English. It is also based on the pragmatic reason that only competence in dealing with English is available in the research mapping process.

1.1.5 Project organization

The ASEM desktop study has been carried out by staff members from Danish Clearinghouse for Educational Research. The timeframe for the mapping has not allowed for collaboration with a review group.

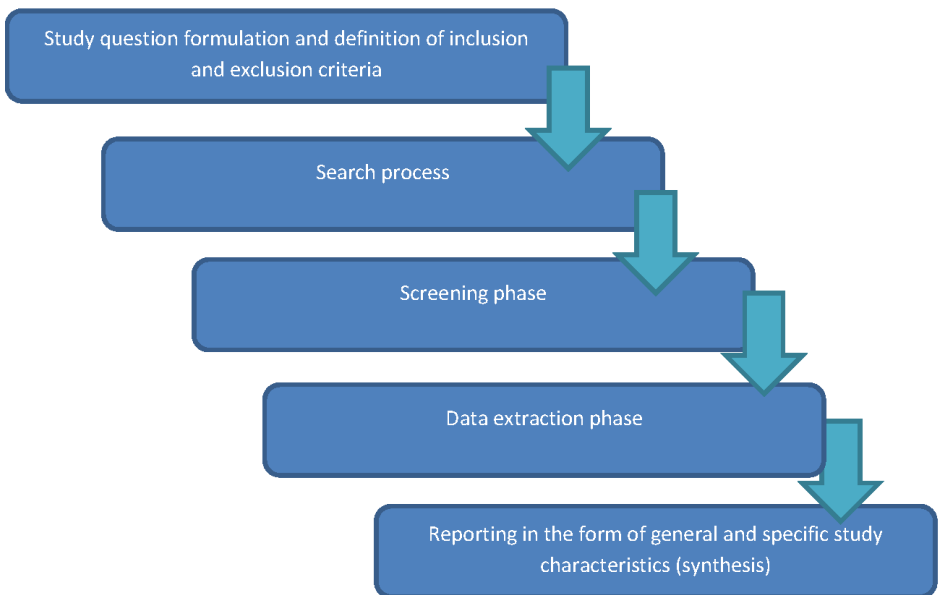
²<http://ec.europa.eu/environment/eussd>

2 METHODS USED IN THE ASEM DESKTOP STUDY

Design and process

The ASEM desktop study was carried out in accordance with general practice at Danish Clearinghouse for Educational Research. The figure below provides an overview of the phases in the ASEM desktop study:

Figure 2.1: The phases in the ASEM desktop study



The first phase in the ASEM desktop study was the formulation of the study question, including the formulation of criteria for the inclusion or exclusion of studies. This ASEM desktop study is delimited in time to studies that were published between 1 January 2010 and 31 December 2015. The publication language has been set to English.

The second phase is the search process, which was carried out based on an explicit search strategy. This strategy took into consideration the time and resources available, placing an upper limit on the number of studies that could be processed and included in the ASEM desktop study. The search was conducted in the world's largest research database on education, ERIC, using the following string:

(sustainable development) AND (higher education) AND (New Zealand OR Australia) OR Asia AND pd(20100101-20161231)

The search in ERIC resulted in 191 studies; these were supplemented by finding references from references, resulting in three additional studies, giving a total of 194 studies. The search has been done for Asia as a whole although not all Asian countries are members of ASEM.

In the third phase, the screening phase, explicit criteria, based on the study question of the ASEM desktop study, were applied to each reference in order to determine if the study should be included or excluded from the ASEM desktop study. These criteria were, for instance, publication date, country of origin, and whether they focus on sustainable development, lifelong learning, and higher education. The studies were screened based on title and abstract. If this information was insufficient to determine whether the study should be included, the full text of the study was read. This process resulted in 23 included studies.

In the data extraction phase, the final 23 studies included were read in their entirety and relevant data was extracted from the studies.

The final phase of the ASEM desktop study was the reporting phase. In this phase the results of the ASEM desktop study were reported and the studies were characterized. The data were then searched for patterns and themes among the included 23 studies, all of which in various ways examined the overall theme of the ASEM desktop study: the role that higher education can play in relation to sustainable development and lifelong learning skills. During this last phase, abstracts were written in relation to the study question for all 23 included studies and a narrative synthesis was conducted.

3 CHARACTERIZATION OF THE INCLUDED STUDIES

A general characterization of the research regarding lifelong learning and sustainable development included in this research mapping will be described in the following. First, general characteristics such as country or countries where the studies were carried out and research designs used will be presented and then more specific conditions will be accounted for.

3.1 General characterization of the included studies

The geographical scope was set to include studies from Asia, Australia and New Zealand. There is a high number of countries (26) represented, as can be seen in Table 3.1.

Table 3.1: Country or countries in which the studies were carried out

Country/countries	Number of studies
Australia	13
Thailand	4
Japan	3
New Zealand	3
China	2
Indonesia	2
Pakistan	2
Bangladesh	1
Cook Islands	1
Fiji	1
India	1
Kiribati	1
Korea	1
Malaysia	1
Marshall Islands	1
Nauru	1
Niue	1
Papua New Guinea	1
Philippines	1
Samoa	1
Solomon Islands	1
Chinese Taipei	1
Tokelau	1
Tuvalu	1
Vanuatu	1
Vietnam	1

In this ASEM desktop study, studies published from 2010 and onward have been included. The distribution can be seen in Table 3.2. The table indicates that the year with the highest number of publications was 2010. Variations in the number of publications in the years 2010 to 2016 may very well be random. In any case, the research presented in this ASEM desktop study can be described as being up to date.

Table 3.2: Publication years

Publication year	Number of studies
2010	7
2011	4
2012	2
2013	2
2014	4
2015	2
2016	2

Table 3.3 below gives an overview of the overall research method used in the studies included. As can be seen from the table, all but four of the studies have a purely qualitative approach – and in almost all cases of a descriptive nature.

Table 3.3. The overall research method used

The overall research method used	Number of studies
Qualitative	19
Quantitative	0
Mixed methods	4

3.2 Specific characterization of the included studies

The following sections will account for characteristics of the included studies that are specifically related to lifelong learning and sustainable development. Table 3.4 below characterizes the 23 studies in relation to their research focus areas.

Table 3.4: Focus/foci of the studies

Focus	Number of studies
Curriculum development	10
Community learning	6
Culture change in higher education	3
University networks	2
Teacher attitudes in higher education	2
Fieldwork as part of higher education	1
Study abroad as part of higher education	1
Student teachers' understanding and self-awareness	1

The table shows that ten studies investigate aspects of curriculum development in relation to lifelong learning and sustainable development. Six studies cover how higher education can have an impact on community learning, while three studies consider how to change the culture in higher education institutions towards lifelong learning and sustainable development. Two studies have used university networks and two studies cover teacher attitudes in higher education. Three areas - fieldwork as part of higher education, study abroad as part of higher education, and student teachers' understanding and self-awareness - have one study each.

4 THEMES COVERED IN THE RESEARCH

This chapter will look at the prominent tendencies in the included research. Tendencies will be identified as broad themes in and across the 23 studies with their respective foci mentioned in Table 3.4. To further differentiate the studies, each theme will be further divided into a number of subthemes.

The research mapping aims to provide answers to the question: *How does higher education in selected countries in Asia contribute to sustainable development by working with the continuous development of lifelong learning skills?*

First, all studies were analysed in relation to higher education and lifelong learning; next, they were analysed in relation to higher education and sustainable development.

The analysis in relation to higher education and lifelong learning revealed three main themes:

- Curriculum development
- University networks
- Community learning

The analysis in relation to higher education and sustainable development likewise resulted in two main themes:

- University teaching
- Community learning

These two sets of themes can be combined, resulting in the following three main themes regarding higher education, lifelong learning, and sustainable development:

- University teaching and curriculum development
- University networks
- Community learning

4.1 Theme 1: University teaching and curriculum development

The first theme on *university teaching and curriculum development* covers aspects of how universities impart knowledge of sustainability to students so as to promote lifelong learning and sustainable development in various ways. Three subthemes can be identified: changing curricula to include ESD in existing disciplinary areas or delivering ESD (Education for Sustainable Development) as “stand-alone” courses; moving beyond the campus to provide

ESD learning experiences outside the university walls; and influencing teachers' attitudes to embrace ESD within their teaching. Each of these subthemes will be considered below, including examples of how the studies actually have pursued their aims.

4.1.1 Subtheme: Changing curricula

A majority of studies (10 out of 23) deal with sustainability by means of curriculum development in higher education, whether undergraduate training, graduate training, or in-service training. In eight studies this is done by integrating ESD in existing disciplinary areas. The typical argument for such integration of ESD is that it emphasizes the development of sustainability in relevant fields of professional practice, leading to better preconditions for lifelong learning as students and graduates perceive sustainability to be part of their personal professional identity.

In a paper from an Australian school of architecture and building, **Fuller (2010)** presents a case study where tertiary engineering and architecture students are introduced to the concept of sustainability, particularly in the areas of renewable energy and the built environment. In order to encourage the students to reflect upon the meaning and implications of concepts of sustainable development, they were introduced to a model with the following four principles: the futurity principle; the environment principle; the equity principle; and the participation principle. The author applies these principles to sustainable buildings and energy for sustainable development – and writes the paper – to challenge the illusions that can hide behind uncritical thinking.

The author concludes that his approach never failed to stimulate a lively discussion and, for a short time at least, “sustainability” is certainly not a lifeless cliché. Students debate both with the author and with each other. The discussion is designed to encourage students to think more critically about the key issues involved in any debate about sustainability.

Two other Australian researchers (**Holdsworth and Thomas, 2015**) argue that universities have a responsibility to lead societies towards a sustainable future as they operate in a broad societal context and have the potential to contribute to sustainable development through their role in preparing many future decision makers and professionals. They also give a thorough description of an action research project re-culturing educational practice rather than merely restructuring curricula at two academic schools (the School of Property Construction and Project Management (PCPM) and the School of Management) in an Australian university. An important aspect was to select “champions” based on their interest in ESD to spread appreciation of the relevance of sustainability in a bottom-up approach.

Their conclusion is that effective curriculum change involves more than simply adding additional content to a single course – it requires transformative organizational change, planning,

and resources, especially time. Staff engagement and professional development are key and it must be recognized that change is complex and that cultural barriers that reinforce existing knowledge patterns must be taken into account. Curriculum revisions must fit within the culture of the organization and be placed within specific contexts.

In another Australian paper **Iyer-Raniga and Andamon (2016)** report on a research project undertaken with the purpose of integrating sustainability thinking and practice into engineering/built environment curricula in Asia-Pacific universities. The research was carried out under the auspices of ProSPER.Net (Promotion of Sustainability in Postgraduate Education and Research Network), with the project entitled: "Integrating sustainability education into engineering and built environment curriculum". The integration of sustainability thinking and practice into the curriculum was achieved through a professional development programme for university teaching staff, including the development of a framework for a curriculum guide for university teachers and curriculum developers within the built environment disciplines.

The design used in the study combined a literature review with a three-day workshop, in which collaborative inquiry processes took place between academic and practice-based participants (an action research design). As such, the workshop was attended by both university teaching staff and industry professionals dealing with sustainability concerns in their day-to-day work. It was essential for the development of a curriculum guide for academics that academia and industry had the opportunity to co-develop the key requirements of curricula, sharing knowledge and experiences from both sustainability theory and practice. Through this collaborative and participatory approach, the workshop identified how best to integrate sustainability thinking and practice into curricula.

The conclusion was that the approach taken for sustainability education needs to move from traditional ways of thinking and doing to a new agenda – important here is interdisciplinarity, transformative learning, professional development for educators, and collaboration with industry.

A cooperation between a researcher from Pakistan and a researcher from New Zealand (**Naeem and Neal, 2012**) provides information about the extent to which sustainability is integrated into business school education and learning in the Asia-Pacific region. The authors attempt to perform the first region-wide survey of sustainability in business education in the Asia-Pacific region.

The study collected comparative quantitative and qualitative regional data about the integration of sustainability in business schools in the area. The survey was designed to gauge the integration of sustainability issues in programme provision, and to identify the obstacles

and difficulties encountered by those involved in promoting and implementing ESD in their respective institutions.

Results were that corporate governance, sustainability, and business ethics are commonly taught, but not generally prioritized. There was an overall lack of systematic approaches to the integration of sustainability in business curricula, and there were significant barriers to the integration of sustainability into programmes, including inertia and lack of knowledge among faculty, as well as a lack of case studies on sustainability in the region. Possible facilitating factors include: joining regional networks committed to sustainability, more regional case studies, and bringing in speakers/adjuncts with practical experience in sustainability issues. Overall, the authors conclude that there is still a long way to go before sustainability is integrated into business education in the region.

Efforts to integrate sustainability education into international marketing curricula are reported from one Australian university by **Perera and Hewege (2016)**. The authors find that curriculum development projects aimed at integrating sustainability education into international business and marketing curricula are scarce. They believe that it is necessary to adopt a more evidence-based understanding of student attitudes towards sustainability, realizing that it is important to avoid teaching abstract theories without adding evidence from practice and to adapt teaching methods according to how students learn and their current awareness of sustainability, centred on real-world issues.

In their study the authors investigate the learning gaps in sustainability education among undergraduates enrolled in an International Marketing course in order to propose a series of pedagogical practices that can lead to the effective integration of sustainability education into curricula. The study uses a mixed method design using a two-phased research method consisting of an online survey conducted among undergraduates enrolled in an international marketing course and a content analysis of essays written by undergraduates evaluating sustainable marketing practices of international firms.

The results show that there is a need for awareness of knowledge gaps and for teaching critical thinking and analytical skills in order to redefine the social role of the corporate sector in terms of addressing sustainability issues. It is necessary to enable students to develop skills in assessing the potential market success of business strategies – skills in scenario building regarding sustainability initiatives in a corporate context. To do this, international marketing curricula must be redesigned based on critical perspectives of the function of the corporate sector. This can enhance students' abilities to embed sustainability in their work as well as in their personal lives.

Within the field of accountancy, a discipline that has long been resistant to sustainability initiatives, **Qian (2013)** has investigated the process of developing educational change for sustainability at an Australian university. The study analyses how the university embraced two change approaches (both top-down and bottom-up) and integrated and institutionalized its change strategy, research capacity, staff transformation, and ESD at both the university and discipline-specific levels.

The study employs a case study method at a very young university (established just 20-25 years ago) which has been increasingly engaged with the subject of sustainable development since 2002. The conclusion is that a successful change strategy needs to embrace a top-down approach to initiate change and a bottom-up, capability-building approach to develop institutional commitments that can sustain this change. A well-designed change strategy needs to be built within an institutional environment where capability and cultural support can be developed to formalize and stabilize sustainability values during the change.

In an effort to provide an overview of the contributions of the Asia-Pacific region to leading practice in sustainability in higher education, two researchers from Japan, one from the UK, and one from the US (**Ryan et al., 2010**) have written a prelude and orientation to a journal issue with examples from different countries and regions in the Asia-Pacific region.

The paper provides a critical descriptive review that includes international and regional policy contexts in sustainability and education for sustainable development, whilst exploring the trajectories of key initiatives across the region and considering the broader context of sustainability innovation within the higher education sector.

The main findings in the paper are that the Asia-Pacific region offers many creative initiatives and shows considerable progress in education for sustainable development and in understanding the learning dimensions of sustainability. Another paper reports the outcomes of the second action cycle of an ongoing project called "Transition to Sustainability: ECU South West" located in a small, single faculty Australian regional university campus (**Wooltorton et al., 2011**). The paper describes the methodology and findings for the second action cycle designed to research the process used for the transition of curriculum teaching and learning to sustainability.

The authors found that foreclosing on the meaning of sustainability prevented the inclusion of important aspects of sustainability; thus the problem of meaning functioned to foster involvement in dialogue. These ongoing discussions around sustainability and the notion of a sustainable future formed the heart of this action cycle. However, there were constraints associated with the subject of dialogue. These included problems of site communication,

the maintenance of effective networks, and issues concerning power and authorization. It was observed how each of these elements could work together in ways that both enrich and obstruct a transition to sustainability. Finally, it was found that a lack of time hinders participation in sustainability transition projects because of its effect on authentic dialogue, thereby having an impact on the development of collaborative ways of working within the university.

One Australian study argues for “stand-alone courses” (**Hegarty et al., 2011**) with the explanation that, while a full integration of sustainability across all courses is crucial, part of the necessary change process must be to find ways to introduce sustainability into courses in the hope that this and other changes will eventually lead to the full integration of sustainability. Thus, a stand-alone course can be seen as far from ideal, but nonetheless a feasible option that can be quickly developed and implemented, building capacity by whatever means currently possible.

The course studied carries the title “Sustainability: Society and Environment (SSE)” and is a first-year undergraduate course run at the School of Global Studies, Social Science and Planning. It is compulsory for seven professional degree programmes, but is delivered outside core courses. The study is also available as an elective. The course includes lectures and workshops/tutorials as well as an online learning hub and professional mini-case studies, with a focus on learner-centred pedagogy (helping to situate curriculum content and learning objectives meaningfully for each participant) and problem-based learning, as well as on applied professional contexts. The course emphasizes the importance of integration of content knowledge and transferable skills – a professionally situated, integrated curriculum. The intention with the course is to foreground a sense of shared responsibility for solutions, highlighting the multidisciplinary nature of sustainability practices and creating a shared professional perspective. The course incorporates a focus on reflective learning practices and attempts to link the relevance of sustainability considerations to different disciplinary and professional fields, acknowledging that sustainability requires a multidisciplinary approach and thereby breaking with deep disciplinary silos. The course presents content knowledge in the context of the complex, situated forms through which sustainability must be understood, with applicability to all degree programmes within the student group.

In terms of design, a qualitative research project was undertaken with students completing the course in 2008, as well as coordinating staff. Staff were interviewed individually and asked to reflect on their rationales for various components of the curriculum. Students were asked to join focus groups and offer feedback on key aspects of the course. Five focus group interviews were conducted.

Findings suggest that while academics build towards a deeply embedded sustainability ethic in higher education, specialist parallel courses have a valuable role to play in the transition to sustainable futures. Stand-alone courses add a wide range of value to the goals of universities, fostering transferable skill sets, locating new knowledge within disciplinary spheres, and situating learning objectives in complex, real-world contexts. Much resistance and discomfort were experienced by students, shedding light on the challenges confronting sustainability educators. The authors suggest modification of the problem-based approach with first-year learners, stating that a mix of teacher- and learner-centred approaches may better support students as they transition to tertiary studies.

The Australian researchers **Edirisinghe and Fraser (2015)** have redesigned and studied a master's degree programme of sustainable practice for working professionals. The programme brings together people from different professions but with similar questions so that they can work together to explore issues of sustainability. Analysing primarily qualitative data, the authors compile a set of recommendations that can be implemented through proposed curriculum design components. The recommendations, which are not specific to ESD, are that master's programmes need to: offer choice, flexibility, and authentic work-based assessment opportunities, provide significant guidance to achieve individual aspirations and customize the programme for each student. Also, it is important to recognize learning through current workplace roles and through continuing professional developmental opportunities. Master's programmes need to use integrative assessments to achieve the official knowledge and skills qualification requirements. They must incorporate short accredited courses, in particular for the development of employability skills, and support students' transition to professional work life.

4.1.2 Summary on changing curricula

The ten studies in the subtheme changing curricula show that universities have accepted the challenges of incorporating ESD in their training programmes. The studies also show that it has not been an easy task. A lot of re-culturing has taken place within disciplinary areas which cover fields as diverse as business, accountancy, engineering, construction, and architecture. Moreover, studies have shown the need for extending the argumentation beyond the sphere of higher education. It is not enough to require a contextual understanding of the pedagogy within the educational institutions about how sustainability should be understood and implemented; it should also inform professional industry bodies and potential employer groups. The change must take place in the context of the existing, broader built environment stakeholders – industry, professional and government interests – highlighting the necessity for industry collaboration to address the reality graduates face now and in the future.

Summarizing the integration of ESD in curriculum development in Asia, it can be said, as suggested by **Ryan et al. (2010)**: “The Asia-Pacific region offers many creative initiatives and shows considerable progress in education for sustainable development and in understanding the learning dimensions of sustainability. At the same time, it mirrors global trends in that further work is needed to promote systemic change in educational arenas, particularly in terms of strategic integration within higher education institutions. The Asia-Pacific contributions demonstrate the need to harness national policy, to develop local and regional initiatives and to work effectively towards more profound change in higher education curricula and through collaboration with external community and stakeholders” (p105).

4.1.3 Subtheme: Moving beyond the campus

Two studies present interesting learning experiences outside university walls: one is about study trips abroad, the other covers fieldwork education.

In the work by **Dvorak et al., (2011)**, four US researchers show that a partnership between internationalization and sustainability efforts is necessary to help institutions of higher learning become both global and “green”. The study uses case studies of programmes that seriously engaged with both the contradictions (carbon emission) and opportunities (learning to become green) inherent in the idea of sustainable international education.

One case was a study trip from the US to New Zealand and the Cook Islands. On this study trip, students had to calculate their total carbon footprint and visited places where threats to biodiversity could be seen and methods to reduce emissions were used. There were clear signs that these amalgamated experiences helped inspire students to take a number of environmental initiatives upon their return.

The conclusion is that higher education institutions can use their position, not only within their immediate communities but also within the larger organizational field of higher education, to take steps towards sustainability. Furthermore, higher education institutions have to think very carefully about how, where, and why we study abroad.

A study from an inland Australian regional multi-campus university concerns fieldwork education as part of higher education (**Trede, 2010**). The study explored the scope of online debates to foster a sustainable, university-wide fieldwork education model discourse, to break down professional silos, to inform the development of university-wide fieldwork education benchmarks, and to cultivate fieldwork education leadership. A software program Interact was used as the online platform for the debate.

A total of 19 staff members representing all four faculties (science, art, business, and education) were invited to participate, with 15 choosing to take part. The theoretical base was critical theory of communicative action. Responses comprised the process of constructing texts which were coded and clustered into themes, with frequencies of themes given relative weightings.

The findings demonstrated that, collectively, participants shared a wealth of experience and wisdom that remained largely untapped at a university-wide level. Participants' evaluations highlighted the perceived value of creating a communicative space for a fieldwork education discourse and it exposed aspects of the online environment and time constraints as the biggest barriers.

4.1.4 Summary on moving beyond the campus

Study trips and fieldwork can be important elements in higher education. Study trips abroad will often have environmental consequences due to carbon emission, and where and how to travel needs careful consideration. Fieldwork can provide students with a lot of knowledge and experience and bring them closer to their future jobs. How to arrange and use fieldwork is most often reliant on the knowledge of individual higher education teachers: discussion forums may well lead to a higher degree of sustainability within university courses.

4.1.5 Subtheme: Teacher attitudes

Three studies are included within the subtheme of teacher attitudes. Two of these deal with teacher attitudes within higher education institutions, while the third focuses on student teachers.

The aim of a study conducted by two Australian researchers **Ralph and Stubbs (2014)** is to find the best ways to integrate environmental sustainability within universities.

The study uses case analysis of four English universities and four Australian universities. The background for comparison was the dissimilarity in policy, regulations, and climate change actions in the two countries, where England is mentioned as world leading. Document analysis of websites and other sources provided information that is used in semi-structured interviews with 18 centrally placed staff members from the eight universities. Transcripts have been sent to the interviewees for confirmation. The total dataset has been coded and used to determine themes and subthemes. Themes are organized in three groups: drivers, barriers, and key success factors.

The researchers found that individuals committed to the goal of a more sustainable world play a vital role in the success of integrating sustainability into universities. The factors critical to enabling universities to undertake the transformational changes necessary to embed

environmental sustainability into all university areas included: a strong policy environment, resourcing of strategies, and encouragement of leaders and environmental sustainability advocates. Educating and building the awareness of university staff of the importance of environmental sustainability to future generations was key to a successful strategy.

In another study, this time from New Zealand, **Shepard and Funari (2013)** explored what university teachers think about education for sustainability.

This mixed methods study used Q-methodology and six open-ended questions among 43 university teachers from one New Zealand university. Q data from 50 cards were subjected to factor analysis and the open-ended questions were used for qualifying explanations. The 50 cards presented to teachers covered statements about the inclusion of education for sustainability in their teaching.

The results found that there exist four statistically and qualitatively different viewpoints among higher education teachers. One, and the most prominent, is that sustainability should not be an optional extra, but should underpin everything that we do in higher education. The other three viewpoints do not share this view, but have different arguments. One group of teachers believes that sustainability does not underpin everything we do, but is instead a personal priority, and that their own teaching has only a minor impact on global affairs. Another group is not particularly convinced that sustainability should underpin everything they do in higher education. The fourth group underlines their academic freedom and responsibility to critique and be independent.

Finally a New Zealand study has measured student teachers' understanding and self-awareness of sustainability (**Birdsall, 2014**).

An interpretive methodology was used to frame the research and data were gathered using a questionnaire that contained both closed and open questions. A total of 77 New Zealand student teachers in the final year of a three-year Bachelor of Education (Primary Specialization) degree consented to complete the questionnaire. The questionnaire used in this study comprised five items and the data from two of these items were analysed and are presented in this paper.

There were two substantial findings from this research. Firstly, the development and use of the two tools resulted in findings about these student teachers' levels of understanding and self-awareness. The second group of findings related to the range and complexity of their understandings. Many students had simplistic understandings of sustainability that were focused on an environmental component and they could not accurately rate their own

level of understanding. The results provide evidence of the need to include sustainability education in initial teacher training programmes and provide a starting point for designing such courses that would enhance student teachers' understandings and assist in sustainability education programme design.

4.1.6 Summary on teacher attitudes

Changing teacher attitudes towards sustainability is not necessarily easy. Teachers are specialists in their domain and including ESD in their lectures may seem distracting, political, or even unimportant. Moreover, university teachers pay great heed to their academic freedom. To change attitudes and to educate and build the awareness of staff require higher education institutions to have a strong policy environment, resourcing of strategies, and encouragement of leaders and environmental sustainability advocates.

4.2 Theme 2: University networks

Three studies cover university networks established to enhance knowledge of sustainability in a way that promotes lifelong learning and sustainable development.

In a collaboration between a researcher from the US and a researcher from Malaysia (**Corcoran and Koshy, 2010**), one paper seeks to create an area profile of significant activity and possibility in higher education for sustainable development in the island nations of the South Pacific Ocean.

The paper provides a descriptive overview of philosophy, policy, and practice in an analysis of developments, challenges, and prospects in South Pacific Island nations. The developments and prospects are contextualized within the larger regional Pacific Education for Sustainable Development Framework and Action Plan for Sustainable Development in the Pacific Islands 2008-2014.

The conclusion is that South Pacific universities possess rich missions that valorize traditional knowledge and culture. The region also has a sophisticated development of sustainability policy. These factors create many opportunities for sustainability in higher education. Nevertheless, enormous challenges of distance, funding, cultural traditions, globalization, and adaptation to the devastating effects of climate destabilization make progress difficult. Successes and promising prospects are described, including a new major effort to mainstream higher education for sustainable development by creating a Pacific Network of Island Universities which will include 13 nations.

The second university network study, conducted by three US researchers (**Chapman et al., 2014**), describes advantages and constraints in cross-border university networks as develop-

ment strategies. The networks are designed to strengthen the capacity of participating universities to prepare future health workers in the early identification and response to outbreaks of infectious and zoonotic diseases. One network includes ten universities in Indonesia, Malaysia, Thailand, and Vietnam, while another comprises three existing university networks in Vietnam. These networks aim to promote trans-disciplinary capacity building, to establish an administrative structure, and to secure a long-term sustainability network structure.

Data sources are systematic reviews and evaluations of the networks using a single method described as multilevel stakeholder analysis. Cross-case analysis is organized around three main categories: organizational issues, academic staff issues, and donor issues.

The findings suggest that networks can be useful mechanisms for promoting a social and educational agenda while at the same time strengthening the capacity of participating universities. However, findings also suggest that success is not guaranteed. While university networks can expand resources and capabilities, they also increase operational complexity. University partners enter the network with different resources, capacities, and constraints, which in turn shape how they participate in and what they expect from the network. The recognition of and ability to leverage individual and institutional resources and motivation are the key to success.

In a collaboration between a university in Thailand and a university in Australia, **Naeem and Peach (2011)** describe how a consortium of universities in the Asia-Pacific region are endeavouring to make a contribution to the implementation of education for sustainable development through their participation in and operation of the Promotion of Sustainability in Postgraduate Education and Research Net project.

The paper is a descriptive report of the evolutionary development of one of the projects in the network of business schools as the members seek to institute changes at their respective institutions at the same time as contributing to regional education for sustainable development.

The results are that whilst many local actions are being initiated in relation to education for sustainable development within individual universities, there is insufficient cross-institutional collaboration occurring to achieve the transformative agenda of education for sustainable development. In particular, universities are leaving it to individuals and departments to develop new curricula for education for sustainable development. To overcome this, work is required at a disciplinary level across the higher education sector, both nationally and internationally, to support curriculum development for education for sustainable development. The study has descriptive value, showing that collaboration on curriculum development for education for sustainable development will be beneficial for all.

4.2.1 Summary on university networks

University networks can help to promote a social and educational agenda while they at the same time strengthen the capacity of participating universities. There are, however, obstacles. One is that universities often leave it to individuals and departments to develop new curricula or other changes. Another is that there are profound challenges in terms of distance, funding, cultural traditions, globalization, and adaptation to the effects of climate destabilization which make progress difficult. Successes and promising prospects are described, including a new major effort to mainstream higher education for sustainable development by creating a Pacific Network.

4.3 Theme 3: Community learning

Five studies engage with community learning in five different ways.

Two researchers from an Austrian university and one from a Canadian university (**Chowdhury et al., 2010**) have engaged in facilitating participatory communication through the use of two types (scripted and unscripted) of filmmaking (Participatory Video, PV) that trigger local innovations and bring them to a wider audience of users, partners, and policymakers in the context of enhancing local seed innovation systems in rural Bangladesh.

A research facilitation team and a separate farmers' video team were created. Twenty farmers participated in the scripted PV and 26 in the unscripted PV. For the scripted PV, a technical topic was chosen, local practices for eggplant seed production and post-harvest, whereas a topic addressing both social and technical issues was chosen for the unscripted video. After development of the final films, screenings were organized, and the films were broadcast on a local cable television channel in the district. After each screening, audience feedback was solicited through open discussion. Data collected through participant observation, informal interviews, group discussions, and workshops were analysed using qualitative methods.

Results show that farmers and facilitators found that the positive factors of scripted video outweighed the negative factors. The capacity-building function of scripted video was perceived as the major strength of this style. With regards to the unscripted video, perceived strengths included the participatory monitoring function, the development of a spirit of self-reliance and enthusiasm, the creation of ownership and autonomy, the raising of multiple views, the complementarity with other participatory tools, and the spontaneous qualities that allowed for the discovery of issues that may otherwise have been overlooked. Perceived weaknesses of this style included a lack of usefulness of the final film beyond the context as the stories documented in the unscripted video were seen as too subjective and particular.

A researcher from a university in Thailand and a researcher from a US university (**Charungkaitikul and Henschke, 2014**) have conducted a study with the purpose of portraying the situation with regard to lifelong learning and education in Thailand through an analysis and synthesis of five best-practice learning society case studies.

The study, using descriptive methods, showed that successful learning communities featured the following characteristics: the communities followed clear guidelines on how to transform themselves into learning societies; communities organized a series of activities aimed specifically at the promotion of lifelong learning on a regular and continuous basis; the community members significantly applied their local knowledge or wisdom, including art, local culture, religion, ways of living, sufficiency economy philosophy, and agricultural expertise to the development of their communities; the communities possessed efficient and knowledgeable working groups which not only worked effectively as a team but also showed an eagerness to work to maximize benefits to their community; the communities emphasized democracy and good governance as guidelines for developing themselves into peaceful, righteous learning societies; the communities possessed local wisdom and well-respected leaders that had clear visions of the their community's development towards self-reliance where members live prosperously and happily; the communities had faith in the basic social institutions of religion, educational institutions, and families; the communities learned from practice and experience while accepting and applying new knowledge; and finally, if any problems arose, the community members worked together to overcome them and this harmonious relationship brought about new knowledge.

In a collaboration between an Australian university and a researcher affiliated to universities in Australia and South Africa (**Kearney and Zuber-Skerritt, 2012**), work has been done to extend the concept of “the learning organization” to “the learning community” and to demonstrate how leaders in a migrant community can achieve positive change at the personal, professional, team, and community learning levels through PALAR – Participatory Action Learning and Action Research. Moreover, the study aims to identify the key characteristics of a sustainable learning community.

The case study focused on and identified the key characteristics, processes, methods, and outcomes of the sustainable learning community that the Voice of Samoan People leadership development programme has helped to build in a metropolitan area in Australia. The study shows that a lack of cultural understanding on the part of government agencies contributes to a migrant community's socioeconomic disadvantage in the form of high unemployment and crime rates, underachievement in education, and exclusion from higher education.

The researchers conclude that the findings represented in the conceptual models enhance understanding of the key principles and processes involved in an organizational learning project for sustainable development of a learning community. They also state that their models and conclusions may fruitfully inform and be adapted by other learning communities when addressing their own particular issues, concerns, and learning needs.

Two researchers from the Shangri-la Institute for Sustainable Communities in China (**Liu and Constable, 2010**) provide a brief background on ESD and lifelong learning and present a case study of a community project in China. The institute is a locally managed NGO working with communities around the area of Shangri-La in south-west China. Through engagement with communities, a process of community-based ESD is facilitated in order to build and maintain communities that are ecologically sustainable, economically viable, and socially just.

The case study outlines what and how community members learn about sustainable development. Important factors related to ESD and community learning are the three facets of social learning: 1) learning partnerships, 2) learning platforms, and 3) learning ethics: all three are an integral part of a social learning process.

The authors conclude that it is pivotal that the community decide what ESD means to them and that they clarify which skills, knowledge, and values are important to them. The learning has to be informed by and understood within the local context.

The fifth study was performed by the International Programme Coordinator for the Japan Council on the UN (**Noguchi, 2010**). The purpose of the study is to present the background of two community-based projects initiated by the Japan Council for the Decade of Education for Sustainable Development.

The study describes two cases and identifies key elements of community-based ESD. Work is done in a consortium of Japanese organizations and individuals working in diverse areas relevant to sustainable development.

The consortium members, many being NGOs, have emphasized local communities as the core site of ESD promotion in Japan and Asia, and NGOs as the key players in community-based ESD, based on their own experiences at the grass-roots level. The background for the two projects was that the consortium wanted to document community-based sustainable development initiatives led by NGOs, including both education-oriented and action-oriented activities. The endeavour builds on systemic changes, consensus building, and community empowerment. The cases reported have attempted to change the current modernist social, political, educational, and economic systems into more sustainable ones. The contribution

from the study is primarily conceptual in terms of how informal learning in community-based efforts promotes local sustainable development.

4.3.1 Summary on community learning

Community learning is an important and useful endeavour to implement systemic changes, to change attitudes and practices, and to promote sustainable development – mainly via informal learning supported by universities or NGOs. The studies use different methods, but the overall principle is the same – participatory action learning. Community members learn from practice and experience while accepting and applying new knowledge.

5 NARRATIVE SYNTHESIS

This ASEM desktop study provides an overview of empirical research into the question: *How does higher education in selected countries in Asia contribute to sustainable development by working with the continuous development of lifelong learning skills?* In Table 5.1 it can be seen that ten of the included studies have found factors that have a positive impact on the creation of sustainable development by working with the continuous development of lifelong learning skills through changing curricula. Five studies cover the impact of community learning. Three studies show how university networks can be effective, two studies have moved beyond the campus and two studies demonstrate results from working with teacher attitudes.

Table 5.1: Results

Results	Number of studies
Changing curricula	10
Community learning	5
University networks	3
Moving beyond the campus	2
Teacher attitudes	2

On the basis of the 23 included studies, and thanks to the many qualitative studies and three mixed method studies, there is a good foundation for a narrative synthesis that can provide an overview and understanding of how higher education in selected countries in Asia contributes to sustainable development by working with the continuous development of lifelong learning skills. This synthesis can be used to inform policy-based decisions on the grounds of research results.

5.1 Changing curricula

Changing curricula can be achieved in two different ways. One is to integrate ESD in existing disciplinary areas; for example, in business, accountancy, engineering, construction, or architecture. The other is the provision of “stand-alone courses”. Integrating ESD in disciplinary areas gives better preconditions for lifelong learning as knowledge about sustainability becomes part of a professional identity, especially if industry and government interests are taken into account. Stand-alone courses are not ideal, but are a feasible option which can be quickly developed when there is a lack of the necessary time and other resources to implement a more thorough approach.

5.2 Community learning

If community learning is chosen as a means of creating sustainable development by working with the continuous development of lifelong learning skills, the studies point at several pathways: participatory communication, participatory action learning, supporting democracy and good governance, social learning, and using NGOs. Higher education institutions play an important role as facilitators in the promotion of community learning.

Even though there are many different pathways, they have a number of important factors in common. First of all, community learning must build on the development of a spirit of self-reliance and enthusiasm plus the creation of a sense of ownership and autonomy. Second, local wisdom and well-respected leaders with clear visions regarding the development of their communities are important. Last and not least, local culture, religion, and ways of living must be respected. Top-down solutions that do not understand local culture do more harm than good.

5.3 University networks

Networks between universities seem easy to set up, but in practice they do not necessarily work very efficiently. The three studies included here show the main challenges that should be addressed to create sustainable development and the continuous development of lifelong learning skills. First of all, there are the challenges of distance, funding, cultural traditions, globalization, and adaptation to climate destabilization, as well as the increased operational complexity stemming from differences in resources and capabilities. Secondly, there is a risk inherent in the fact that universities often leave the development of ESD to individuals and departments.

Thus policy development and the involvement of top-level university staff must be carefully aligned and coordinated with respect for local variations in resources, capabilities, culture, and traditions.

5.4 Moving beyond the campus

Study visits can provide a great deal of knowledge, but in many cases travel involves carbon emission, especially when air travel is necessary. It is, however, possible to use knowledge about one's own carbon footprint to inspire and help students to take a number of environmental initiatives upon their return from such trips.

Some universities use fieldwork as part of their training efforts in ESD. However, university lecturers have little knowledge of how their colleagues utilize fieldwork in their teaching. To break down professional silos, one university has facilitated online debates among lecturers. The study in a multi-campus university found that a wealth of experience and wisdom could

be tapped, opening up the values of fieldwork. A dislike of the online environment and a lack of time were the biggest barriers to collective learning.

5.5 Teacher attitudes

Individuals committed to the goal of a more sustainable world are crucial for the success of integrating ESD in universities. To undertake the transformational change, all levels should be included - policy statements, resourcing of strategies, and the encouragement of leaders, teachers, and other staff. However, some teachers are not convinced that sustainability should underpin their teaching, while some stress their academic freedom and independence to justify leaving ESD out of their disciplines. Moreover, student teachers must be addressed to fill their roles as ambassadors for ESD.

5.6 Conclusion

The 23 studies show that 26 countries in the Asia-Pacific area have been included in different projects with the aim of contributing to sustainable development by working with the continuous development of lifelong learning skills. Changing curricula to include sustainable development is the most common approach and has been done in a range of diverse disciplinary areas. The establishment of stand-alone courses in sustainable development is also used, in some cases as a temporary measure before integrating sustainable development in existing disciplinary curricula. Community learning is also an effective approach, using participatory communication and participatory action learning to create self-reliance, enthusiasm, and a sense of ownership. University networks can strengthen capacity, but the studies show that policy development and the involvement of top-level university staff must be carefully aligned and coordinated with respect for local variations in resources, capabilities, culture, and traditions. Out of campus activities can give useful experiences and knowledge that can be disseminated. Last but not least, teacher attitudes are important and often need to be worked on to permeate ideas of academic freedom and independence.

Altogether, the 23 studies show that the Asia-Pacific region offers many diverse and creative initiatives and shows considerable progress in education for sustainable development and in understanding the learning dimensions of sustainability.

Looking across the 23 studies, there are a series of common topics that are useful to know. They are:

- **Interdisciplinarity/multidisciplinarity** – the need for approaches that move beyond rigid disciplinary boundaries that constrain and act as barriers to the integration of sustainability in higher education.

- **Sustainability wholly integrated into all disciplines** – the need for change processes leading to a holistic, institutionalized, value-based framework for sustainability. Establishing cultural norms/values for sustainability.
- **Collaboration between multiple stakeholders** – universities, industry, professional organizations, NGOs, government etc.
- **The applied, local/contextual/situated nature** of sustainability.
- **Barriers to the integration of sustainability** – lack of expertise, lack of resources, rigid disciplinary boundaries and divisions, traditions of disciplines resistant to change towards including sustainability, teachers' and students' attitudes.
- **Importance of teaching reflectiveness and critical thinking** – problem-based and active learning.
- **The combination of both bottom-up and top-down approaches** – the importance of both leadership and grass-roots levels.
- **Sustainability as a controversial concept (value-based and political)** – questioning previously held assumptions and concepts, forcing a critical reflection on unexamined/taken-for-granted ideas.

6 References included in the ASEM desktop study

- Birdsall, S. (2014). Measuring student teachers' understanding and self-awareness of sustainability. *Environmental Education Research*. 20(6), 816–835.
- Chapman, D.W., Pekol, A. & Wilson, E. (2014). Cross-border university networks as a development strategy: Lessons from three university networks focused on emerging pandemic threats. *Int Rev Educ*. 60, 619–637.
- Charungkaittikul, S. & Henschke, J.A. (2014). Strategies for developing a sustainable learning society: An analysis of lifelong learning in Thailand. *Int Rev Educ*. 60, 499–522.
- Chowdhury, A.H., Odame, H.H. & Hauser, M. (2010). With or without a script? Comparing two styles of participatory video on enhancing local seed innovation system in Bangladesh. *Journal of Agricultural Education and Extension*. 16(4), 355–371.
- Corcoran, P.B. & Koshy, K.C. (2010). The Pacific way: Sustainability in higher education in the South Pacific Island nations. *International Journal of Sustainability in Higher Education*. 13(2), 130–140.
- Dvorak, A.M.V., Christiansen, L.D., Fischer, N.L. & Underhill, J.B. (2011). A necessary partnership: Study abroad and sustainability in higher education. *The Interdisciplinary Journal of Study Abroad*. 21 Fall, 143–166.
- Edirisinghe, R. & Fraser, K. (2015). The masters of sustainable practice: A review of a program for working professionals. *Australian Journal of Environmental Education*. 30(2), 239–253.
- Fuller, R.J. (2010). Beyond cliché – Reclaiming the concept of sustainability. *Australian Journal of Environmental Education*. 26(1), 7–18.
- Hegarty, K., Thomas, I., Kriewaldt, C., Holdsworth, S. & Bekessy, S. (2011). Insights into the value of stand-alone course for sustainability education. *Environmental Education Research*. 17(4), 451–469.
- Holdsworth, S. & Thomas, I. (2015). Framework for introducing education for sustainable development into university curriculum. *Journal of Education for Sustainable Development*. 9(2), 137–159.
- Iyer-Raniga, U. & Andamon, M.M. (2016). Transformative learning: Innovating sustainability

- education in built environment. *International Journal of Sustainability in Higher Education*. 17(1), 105–122.
- Kearney, J. & Zuber-Skerritt, O. (2012). From learning organization to learning community. Sustainability through lifelong learning. *The Learning Organization*. 19(5), 400–413.
- Liu, Y. & Constable, A. (2010). ESD and lifelong learning: A case study of the Shangri-la Institute's current engagement with the Bazhu community in Diqing, China. *Int Rev Educ*. 56, 271–285.
- Naeem, M. & Neal, M. (2012). Sustainability in business education in the Asia Pacific region: a snapshot of the situation. *International Journal of Sustainability in Higher Education*. 13(1), 60–71.
- Naeem, M.A. & Peach, N.W. (2011). Promotion of sustainability in postgraduate education in the Asia Pacific region. *International Journal of Sustainability in Higher Education*. 12(3), 280–290.
- Noguchi, F. (2010). Identifying key elements of community-based ESD: ESD-J's projects to collect ESD in practice in Japan and Asia. *Global Environmental Research*. 14, 137–146.
- Perera, C.R. & Hewege, C.R. (2016). Integrating sustainability education into international marketing curricula. *International Journal of Sustainability in Higher Education*. 17(1), 123–148.
- Qian, W. (2013). Embracing the Paradix in educational change for sustainable development: A case of accounting. *Journal of Education for Sustainable Development*. 7(1), 75–93.
- Ralph, M. & Stubbs, W. (2014). Integrating environmental sustainability into universities. *Higher Educ*. 67, 71–90.
- Ryan, A.R., Tilbury, D., Corcoran, P.B., Abe, O. & Nomura, K. (2010). Sustainability in higher education in the Asia-Pacific: Developments, challenges, and prospects. *International Journal of Sustainability in Higher Education*. 11(2), 106–119.
- Shephard, K. & Furnari, M. (2013). Exploring what university teachers think about education for sustainability. *Studies in Higher Education*. 38(10), 1577–1590.
- Trede, F.V. (2010). Enhancing communicative spaces for fieldwork education in an inland regional Australian university. *Higher Education Research & Development*. 29(4), 373–387.
- Wooltorton, S., Palmer, M. & Steele, F. (2011). A process for transition to sustainability: Implementation. *Australian Journal of Environmental Education*, 27(1), 160–174.

7 References to textual commentary

Wals, A.E.J (2014). Sustainability in higher education in the context of the UN DESD: A review of learning and institutionalization processes. *Journal of Cleaner Production*. 62, 8-15.

Yen-Chun Jim Wu & Ju-Peng Shen (2016). Higher education for sustainable development: A systematic review. *International Journal of Sustainability in Higher Education*. 17(5).

UNESCO International Environmental Education Programme
<http://unesdoc.unesco.org/images/0005/000597/059759eo.pdf>

UNESCO Agenda 21 <http://www.un-documents.net/a21-36.htm>

EU: Making a European area of lifelong learning a reality
<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2001:0678:FIN:EN:PDF>

EU: Sustainable development <http://ec.europa.eu/environment/eussd>